



National Transportation Safety Board
Washington, D.C.

Date : February 26, 1997
To : Party Coordinators
Copy : Al Dickinson
Dr. Bernie Loeb
Wright-Patterson Laboratories
Subject : Wright-Patterson Facility Report

This letter contains observations from my trip of last Thursday to the fuel laboratory at Wright-Patterson Air Force Base (W-P).

The fuel facility is a series of reinforced concrete test rooms and the laboratory assigned to us is quite small. The test equipment takes up a large volume of the room and the pump noise in the small concrete room is loud. Test sections to be used for leakage/charging will be housed in what appears as an unimpressive steel industrial supply locker. The locker is raised above the floor and has different types of pumps and electric drive motors located below it. The benefit of using the locker is that it permits containment of leaked fuel, a faraday enclosure, and easy re-arrangements of the plumbing. Additionally, since we are trying to determine whether there can be a discharge in the presence of spraying fuel, the locker can be nitrogen inerted, an important safety consideration. The steel locker door can be closed or observation/measuring equipment may be seen through a safety-glass window/door.

Unfortunately, the small size of the test stand prevents more than two or three people from seeing what is happening in the locker. This will require constantly cycling people in and out over the week of testing and the W-P safety people will probably require everybody (except those actually running the tests) to leave the room as tests are run. If this happens, they will try to allow people to watch what is happening by remote video. For those interested, the USAF museum is very close by, as well.

I'm very pleased with who we now have involved. In addition to Tom Peacock from Boeing and Dr. Leonard, we also have the experience of Dexter Kalb of W-P, who conducted the W-P static tests of the early 1980s. Cindy Obringer is the W-P coordinating test engineer and has a masters in fuel misting and droplets, which will assist in discussions about pin-holes and crack types. W-P also has a lab devoted to static investigations and we will have their assistance and equipment to draw upon. A complete machine shop and raw materials are available.

We went over the test plan and they came up with some ideas of how to make it work in the test locker. They are laying in more than 60 feet of tubing between the pump

and locker, although they may use 1" diameter stainless steel tubing. At first, I was a little concerned about the difference in diameter and material, but the very low flow rates we will be using will permit lots of relaxation time for charges to dissipate, the isolated section at the test section will let us know how the isolation is, and the actual test sections will be aluminum. Meters for flow (in and out of the test section) and pressure will allow us to monitor leakage. There will be a variety of interchangeable drilled sections that contain holes of various sizes and I asked that we be able to begin with hole diameters that are equivalent to the #26 and #20 syringes, as used at Naval Research Laboratory. They are also creating actual cracked sections to test with, rather than using cut or manufactured edges.

We're comparing Dr. Leonard's equipment with what's available from the W-P Electro-static lab to see which would be better and to cut down on shipping of delicate measuring devices. They think they can hold to the schedule of our testing during the first week of March, but with so much to do, they may need us to slip a week.

Sincerely,



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